

ANALYSING THE STATE OF HARD SOILS COMPACTNESS WITH UNBENEFICIAL WATER MANAGEMENT IN GREAT HUNGARIAN PLAIN

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Soil is one of the non-renewable resources that is important to be protected. The quality of soil refers to capacity in preserving biological fertility and sustainability in plant production. Short-term prognoses were made lately showed that climate change can considerably affect the soil tilth and water balance in soils. To ensure environmental stability of crop production, there is a growing interest in searching the benefits and opportunities in the analyzation of soil compactness. The present research aimed to study the compactness of soils by using simple instruments that can be practiced by farmers simply. This study was carried out from 2017 to 2019 on hard soils in Great Hungarian Plain. Based on the hypothesis that soil properties and productivity components can be affected by different soil tillage methods, field experiments were conducted to study the effects of compacted hard soils to water management and soil productivity. These type of soils are hard to till since their water management and warming-up process is unbeneficial. Soil compactness keeps roots from developing properly and blocks the vertical motion of water and air aboveground. Conventional and conservational tillage practices are two comprehensive classes that should affect the quality and quantity of soil organic carbon. By not selecting the appropriate tillage operations that can be carried out in several ways, the compactness of soil can be increased. Results showed by using the proper tillage operation in time, hard soils can be manageable and soils physical and chemical properties do not decompose within time. However, weather and soils properties can affect the variation of tillage operations, soil saving can eventuate profitable plant production and environmental protection.

Keywords: plant production, soil tillage, soil compactness, sustainability, climate change